Attachment 7

Corrective Action Report

TSA 2016

4.1.1 Concern: KCDAQM is not performing thorough site evaluations nor documenting assessments that are performed.

Corrective action: KCDAQM conducted site evaluations and included them in the 2017 Annual Network Plan to ensure sites met criteria in 40 CFR Part 58, Appendix E. The evaluation will be completed annually in late March or early April as to be relevant when added to the Annual Network Plan that is submitted to the state of Tennessee in early April.

4.2.1 Finding: Contractual laboratory performed lead analysis without a current SOP and may not have accurately followed an approved federal reference or equivalent method. Data packages did not provide sufficient quality assurance/quality control (QA/QC) results; therefore, KCDAQM did not thoroughly validate its ambient lead data.

Corrective action: KCDAQM joined the EPA national contract for the analysis of lead in ambient air, currently held by Eastern Research Group (ERG). Data from November 2013 thru June of 2016 that were analyzed by First Analytical Laboratories (FAL) has been removed from AQS and replaced with the null data code indicating the data was affected by a lab error and is not usable for NAAQS comparison. KCDAQM at the request of EPA, had all samples reanalyzed at ERG for the lead site with the highest historical values (0023). The highest quarterly values for the other sites (1020 & 0027) were reanalyzed and data was flagged as necessary and reported to AQS with the proper method code.

4.3.1 Concern: The local area network (LAN) share drive for electronic records is not adequately secured.

Corrective action: It is difficult with our small, versatile staff, to restrict access to our entire shared drive. Each person is responsible for multiple facets in the data handling process. KCDAQM is working with IT to establish an adequate solution.

4.4.1 Finding: Ambient data was not invalidated when its associated QA/QC check did not meet established acceptance limits.

Corrective action: All examples listed in finding 4.4.1 have been corrected in AQS and the data has been recertified. KCDAQM now has a designated employee to function as the QA/QC officer who reviews all QA/QC data, and is developing protocol for data review. An Access database has also been created to aid in this process. More detail will be out lined in KCDAQM's revisions of the QAPP, QMP and SOPs.

4.4.2 Finding: Recording of PM_{10} laboratory data was inconsistent compared to information required by SOP and structure of data collection does not allow for efficient data review and validation.

Corrective action: KCDAQM began running PM 10 continuous in late 2015 on a trial basis, with intent to phase out the PM10 filter based method. Due to this finding, KCDAQM's PM 10 program officially transitioned to a PM 10 continuous monitor starting January 1st of 2016. KCDAQM flagged all data collected prior to six months before the approval of the *TEOM FEM PM10 Thermo 1405a SOP* (January 1st 2016 through 5/6/2016) as not adhering to KCDAQMs QAPP.

4.4.3 Finding: KCDAQM continued to use QA qualifier codes on PM_{10} data that did not meet critical criteria after laboratory control issues were resolved.

Corrective action: KCDAQM has removed the "1" flags from data collected after July 2015 and added the proper null data code "AR" indicating a lab error.

4.4.4 Finding: Logbooks, field sheets, and strip chart data from continuous ozone monitors are not being utilized during data verification and validation, allowing invalid data to be entered into AQS.

Corrective Action: KCDAQM updated the parameter check sheet to differentiate between parameters collected that are critical to the reference method designation, critical, systematic and operational criteria for data validity from the parameters collected to aid in trouble shooting. This should allow staff to easily asses the severity of a parameter outside normal ranges, and the validity of the data affected. Precision checks are now entered into an Access data base as well as logbook scans and are reviewed during the data validation process.

Data from East Knox on 5/8/2013 at 1300 thru 5/9/13 at 1200, and data from Spring Hill on 4/15/2015 at 0800 thru 4/23/15 1300 have been invalidated in AQS.

4.4.5 Concern: Data packages from contract lead and $PM_{2.5}$ laboratories are not reviewed and incorporated into data review procedures to ensure that all critical criteria are being met.

Corrective action: KCDAQM has begun reviewing the PM 2.5 laboratory report ensuring that the data KCDAQM has notified IML to flag/nullify has been coded correctly. KCDAQM also checks: archive temps, working standards charts, lab blanks, and equilibration times. KCDAQM also ensures that the appropriate flags and null codes appear on the data once it is uploaded to AQS.

4.5.1 Finding: Existing KCDAQM air monitoring QAPP and SOPs need to be revised.

Corrective action: KCDAQM is in the process of revising all SOPs and the QAPP.

QAPP: Submitted to SESD on 1/6/2017. Comments from SESD received 8/31/2017 KCDAQM response to comments by 2/28/2018

SOPs

Ozone: Submitted 1/6/2017 to SESD. Comments from SESD received 8/31/17. KCDAQM response to comments by 2/28/17

Pb: Pending internal review, estimated submittal by 3/31/2018

PM 10 continuous: Approved 11/17/2016

PM 2.5 FRM: Submitted to SESD 12/20/2017

PM 2.5 continuous (AQI only): Estimated submittal by 12/31/2018

Audit: Approved 5/30/2017

4.5.2 Concern: KCDAQM's data validation and quality assurance system is insufficient and requires significant improvement.

Corrective action: KCDAQM has made great strides in validating data since it began 2015 with a full staff. Rebecca Larocque is acting as our QA/QC officer. She improved the system in 2015 by implementing a designated location for all flow checks and flow verifications to be placed for her review and entry into AQS. Since the audit, she has developed an access data base with all flow verifications, audits, standard certifications, scans of log books (monthly) and a list of samplers and sites. She is able to run queries when validating data to ensure that the standard used is calibrated, if a failed flow verification occurred, when the last passing flow verification occurred, what the log book says about the time period of data being validated, and more. KCDAQM is continually striving to improve data handling procedures. The AMP 256 & 251 reports are evaluated quarterly by the QA/QC officer and all laboratory reports are being thoroughly evaluated. KCDAQM will begin doing bi-annual data audits where a data point for each criteria pollutant is randomly selected and traced

from beginning to submittal to AQS. Other AQS reports (AMP 350, AMP 504 and the AMP 600) are also being utilized in the overall review of data on at least an annual basis.

4.5.3 Concern: Gaps were identified in standard recertification frequency. Standard certificates are not being reviewed after certification.

Corrective Action: A new Access database has been established to assist in scheduling certifications of standards and also identifying when an out of date standard has been used. Tags stating "Do Not Use!" are placed on equipment that should not be used for any reason. KCDAQM will review all certification paperwork.